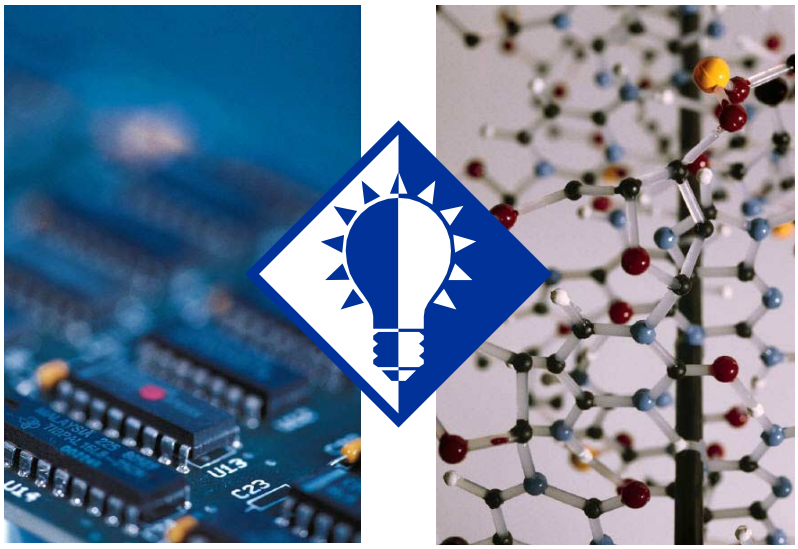
Innovation in the New Economy: *Information Technology and Life Sciences*



TARGET MISSOURI

TM-0102-1
January 2002

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Key Findings

States with well above average information technology (IT) innovation scores were Vermont, Oregon, California, Massachusetts, Idaho, Colorado, Texas and New Hampshire. Missouri had a below average IT innovation score, compared to the national average. Missouri ranked 34th in IT innovation nationally.

A large number of Missouri's IT patents were issued in the data processing industry. Missouri's largest national share of annual IT patents issued were in artificial intelligence, accounting for 1.35% of all patents of this type issued nationally.

States with well above average life sciences innovation scores were Delaware, Massachusetts, New Jersey, Connecticut and Maryland. Missouri had a life sciences innovation score that was at the national average. Missouri ranked 13th in life sciences innovation nationally.

A large number of Missouri's life sciences patents were issued in drug and bio-affecting compositions, organic compounds, molecular biology and microbiology and multicellular living organisms. Missouri's largest national share of annual life science patents issued were in plant protecting and regulating compositions (7.96%), multicellular living organisms (3.45%) and chemical fertilizers (3.05%).

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Analysis and reporting by David J. Peters.

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I. Overview

Innovation is generally considered one of the key components of success in the New Economy. Innovations occurring within an economy usually lead to increased economic output, the creation of more jobs with higher wages, increased investment and increased research and development dollars. Innovation also increases the attractiveness of an area for recruiting new businesses and highly skilled workers.

The notion of firms locating to areas where they can share resources with other similar firms is termed industry clustering, and has been studied extensively by regional economists. These resources are shared products, services and knowledge provided by other industries and institutions. The theory behind industry clusters is that each firm's competitive position in the market depends on one or several supporting industries or institutions. This interdependence between a firm's suppliers and consumers is key to the success of a given industry. Industry cluster analysis views the development of supporting industries as vital to the health and growth of a given industry. Industries can be clustered along labor, knowledge, or inter-industry transactions. Therefore, it is argued that firms and workers generally locate to areas that are innovation centers for a given industry.

The State of Missouri has identified two emerging industries in the New Economy - information technology and life sciences. In its current usage, information technology (IT) is a term that is often used by government and industry to describe a series of processes, products and services related to computers, software, telecommunications and the Internet. The value of IT lies in its capacity to store, analyze and communicate information instantly, anywhere, at a negligible cost. IT is important in that: (1) it increases efficiency and productivity in firms across all economic sectors; (2) it increases access to information, thereby allowing markets to work more efficiently by making transactions more transparent; (3) it allows firms to communicate and send information at almost no cost from anywhere in the world; and (4) it speeds up innovation by reducing the amount of time needed to process data and design new products.

Life sciences, commonly referred to as biotechnology, consists of a set of innovations that are revolutionizing health care, food production, and manufacturing. Life sciences is generally defined as the applied knowledge of biology. Scientific and technological advances now allow humans to manipulate genomes directly at the level of single genes and their constituents, with a speed and precision that far exceed what natural evolution has been able to achieve over the past 3.5 billion years. Scientific advances made in the mid-20th century laid the foundation for rapid growth in life sciences in the 1990s. Since the modern life sciences industry is relatively new, one can still distinguish companies that specialize in pharmaceutical, agricultural and industrial products.

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To measure the degree of innovation within a state, utility patent data was compiled and analyzed. Data is taken from the Technology Assessment and Forecast (TAF) database, maintained by the Patent and Trademark Office of the U.S. Department of Commerce. For this analysis, utility patents (patents for inventions) granted between 1996 and 2000 were extracted from the TAF database. Patents are classified by technology class and geographic location according to information given in the patent application. Technology classes are assigned to the primary technological application of the innovation. Geographic locations were assigned as the physical location of the individual or organization who is the primary patent holder.

TAF classifies patents according to the major divisions of technology in the U.S. Patent Classification System (USPCS). The USPCS currently contains approximately 460 total classes of technology. These USPCS codes were aggregated into broad industry groups representing information technology and life sciences. A list of USPCS codes that comprise these two major industries is presented in Appendix A.

Three measures of innovation were used in this analysis:

(1) *Number of Patents Issued Per 100,000 Population*. This measure removes the effect of population size, and allows for state-to-state comparisons.

(2) *Innovation Scale*. To compare the number of patents issued per 100,000 population to the national average, the standardized z-scores were calculated for each state. Scores of 0.0 indicate innovation at the national average. Scores greater than 0.0 indicate innovation above the national average. Scores less than 0.0 indicate innovation below the national average.

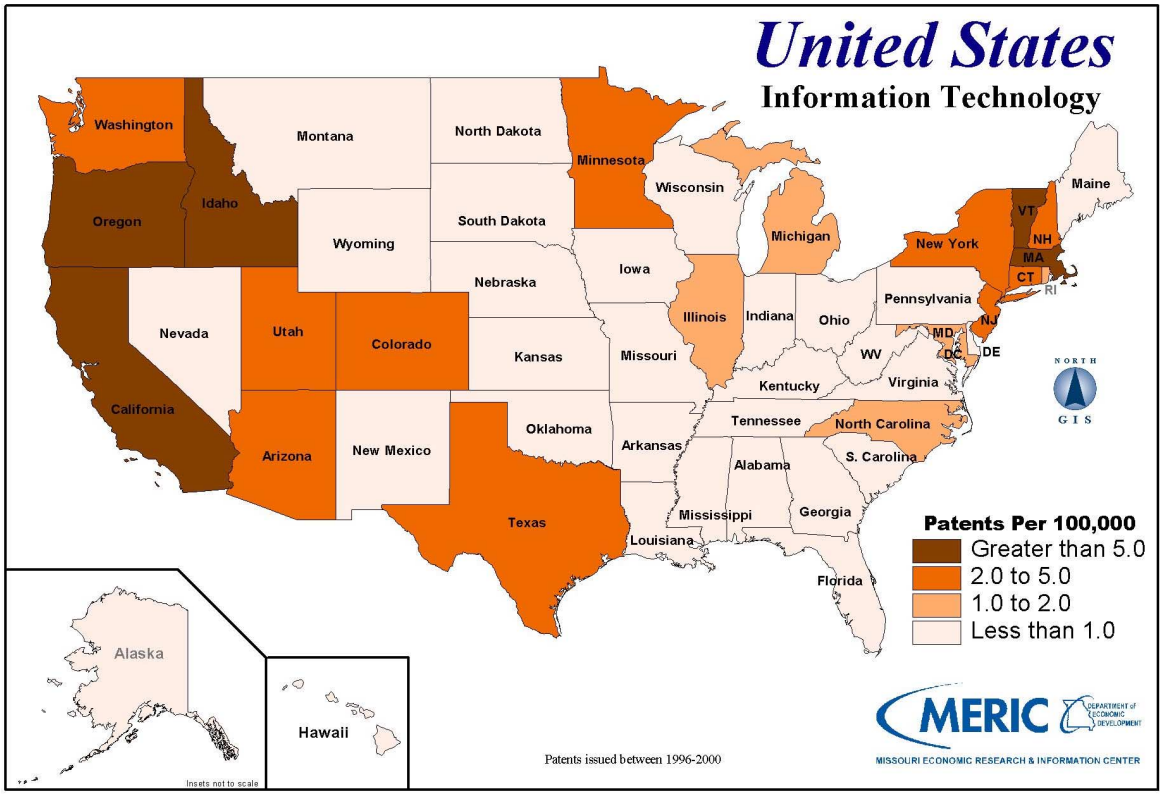
(3) *Change in the Number of Patents Issued Per 100,000 Population*. To measure change over time, the difference between the 2000 and 1996 patents issued per 100,000 population was calculated.

II. Innovation in Information Technology

In the United States between 1996 and 2000, 2.26 information technology (IT) patents were issued per 100,000 population. States with the highest number of IT patents issued per 100,000 population were Vermont (7.14), Oregon (6.02), California (5.72), Massachusetts (5.35), Idaho (5.04), Colorado (4.96), Texas (4.62), New Hampshire (4.40) and Minnesota (3.97). States with the lowest number of IT patents per 100,000 were located in the South, the Great Plains, Alaska and Hawaii.

Missouri ranked well below the national average, with 0.37 IT patents issued per 100,000 population. Between 1996 and 2000, an average of 20 IT patents were issued annually in Missouri.

Map 2.1
Information Technology
Average Annual Number of Patents Issued Per 100,000 Population, 1996-2000
Average annual values for years 1996-2000
U.S. average = 2.26 patents per 100,000 population



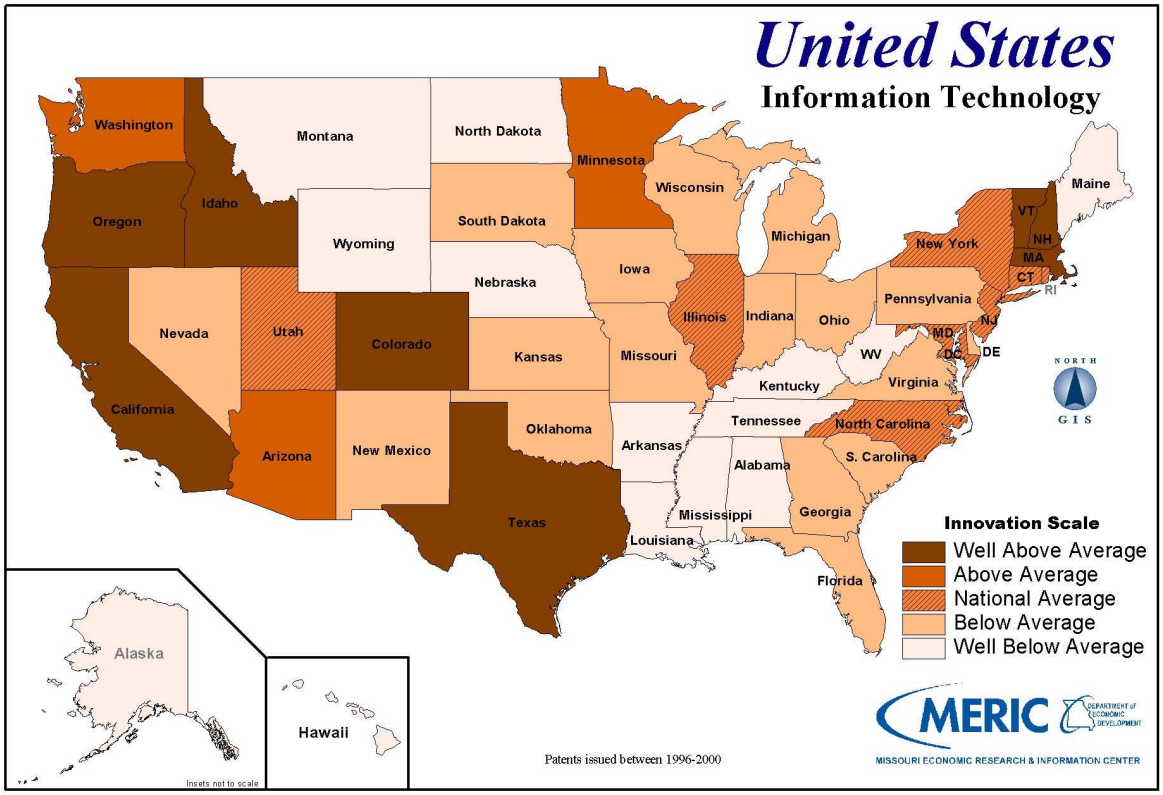
Source: Analysis by MERIC using data from the U.S. Patent and Trademark Office, U.S. Department of Commerce.

The IT innovation scale was created by calculating the standardized z-scores for the number of IT patents issued per 100,000 population. This allows for state-by-state comparison relative to the national average. Scores of 0.0 indicate IT innovation at the national average. Scores greater than 0.0 indicate IT innovation above the national average. Scores less than 0.0 indicate IT innovation below the national average.

States with well above average IT innovation scores were Vermont (2.56), Oregon (1.97), California (1.81), Massachusetts (1.61), Idaho (1.45), Colorado (1.41), Texas (1.24) and New Hampshire (1.12). In addition, Minnesota, Washington and Arizona had above average IT innovation scores. States with well below average IT innovation scores were located in the central South, the upper Great Plains, Alaska and Hawaii.

Missouri had a below average IT innovation score (-0.99), compared to the national average. Missouri ranked 34th in IT innovation nationally.

Map 2.2
Information Technology
Innovation Scale, 1996-2000
Average annual values for years 1996-2000
Normed to the U.S. average of 2.26 patents per 100,000 population

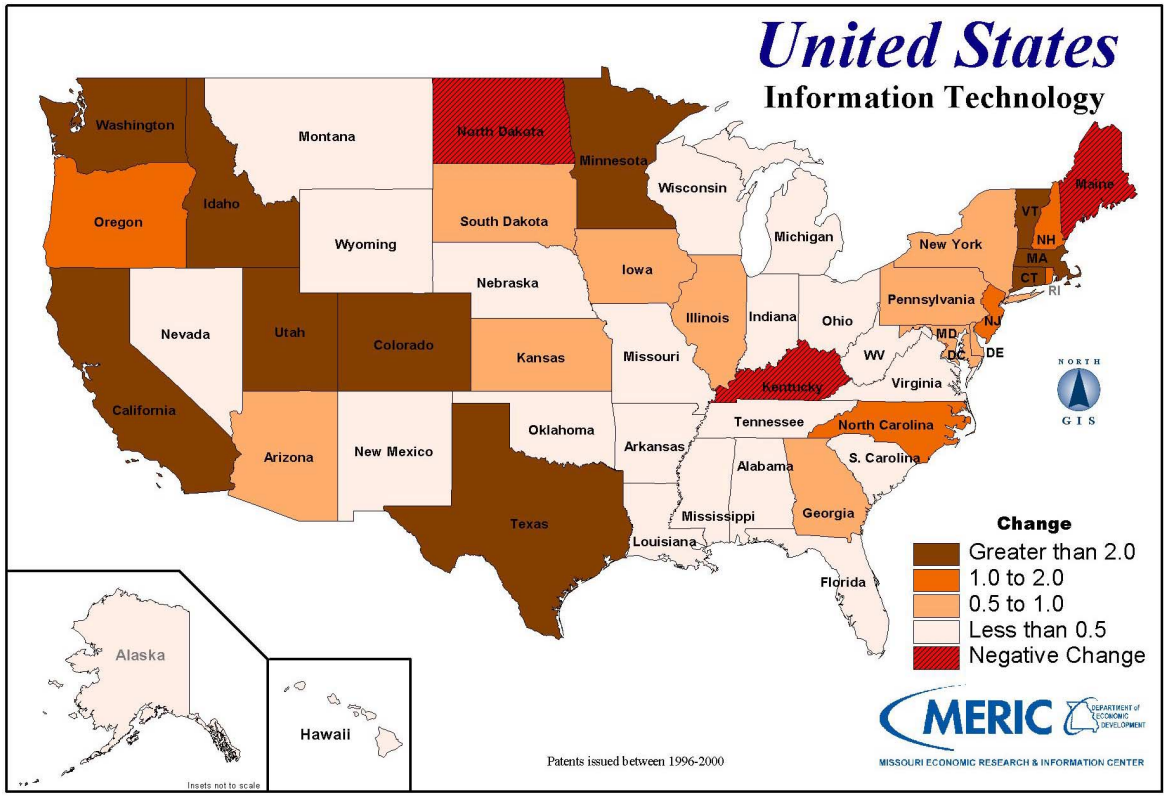


Source: Analysis by MERIC using data from the U.S. Patent and Trademark Office, U.S. Department of Commerce.

In the United States between 1996 and 2000, IT patents issued per 100,000 population grew by 1.28. States with the greatest change in the number of IT patents issued per 100,000 population were Idaho (7.21), California (3.59), Washington (3.39), Minnesota (2.88), Massachusetts (2.77), Colorado (2.72) and Vermont (2.68).

In Missouri, IT patents per 100,000 grew by 0.17 between 1996 and 2000, which was well below the national growth rate of 1.28.

Map 2.3
Information Technology
Change in Average Annual Number of Patents Issued Per 100,000 Population, 1996-2000
U.S. average = 1.28 patents per 100,000 population



Source: Analysis by MERIC using data from the U.S. Patent and Trademark Office, U.S. Department of Commerce.

Table 2.1
Information Technology
Average Annual Number of Innovations by State, 1996-2000
Average values for years 1996-2000

STATE	INNOVATION SCALE	PATENTS PER 100,000	PATENTS ISSUED	CHANGE PATENTS/100K
VERMONT	2.56	7.14	42	2.68
OREGON	1.97	6.02	198	1.95
CALIFORNIA	1.81	5.72	1,874	3.59
MASSACHUSETTS	1.61	5.35	330	2.77
IDAHO	1.45	5.04	62	7.21
COLORADO	1.41	4.96	199	2.72
TEXAS	1.24	4.62	915	2.47
NEW HAMPSHIRE	1.12	4.40	52	1.60
MINNESOTA	0.89	3.97	188	2.88
WASHINGTON	0.81	3.80	216	3.39
ARIZONA	0.55	3.31	156	0.73
NEW JERSEY	0.35	2.93	238	1.73
CONNECTICUT	0.33	2.90	96	2.26
UNITED STATES	**0.00**	**2.26**	**6,132**	**1.28**
UTAH	-0.07	2.13	45	2.38
NEW YORK	-0.13	2.01	369	0.81
RHODE ISLAND	-0.29	1.70	17	1.28
NORTH CAROLINA	-0.35	1.60	121	1.73
ILLINOIS	-0.47	1.36	165	0.95
MARYLAND	-0.48	1.33	69	0.54
MICHIGAN	-0.51	1.28	125	0.40
DIST OF COLUMBIA	-0.67	0.97	5	1.34
PENNSYLVANIA	-0.70	0.92	112	0.51
WISCONSIN	-0.75	0.83	44	0.29
IOWA	-0.75	0.82	24	0.54
NEW MEXICO	-0.77	0.79	14	0.35
KANSAS	-0.77	0.79	21	0.59
FLORIDA	-0.78	0.77	116	0.17
VIRGINIA	-0.81	0.71	48	0.35
OHIO	-0.89	0.56	63	0.34
SOUTH CAROLINA	-0.89	0.56	22	0.24
GEORGIA	-0.89	0.55	42	0.58
INDIANA	-0.93	0.49	29	0.30
DELAWARE	-0.96	0.43	3	0.51
MISSOURI	**-0.99**	**0.37**	**20**	**0.17**
NEVADA	-0.99	0.36	6	0.17
SOUTH DAKOTA	-1.00	0.35	3	0.65
OKLAHOMA	-1.00	0.35	12	0.20
HAWAII	-1.01	0.34	4	0.08
MAINE	-1.01	0.34	4	-0.08
KENTUCKY	-1.01	0.32	13	-0.13
TENNESSEE	-1.02	0.30	17	0.13
ALABAMA	-1.03	0.30	13	0.18
NEBRASKA	-1.05	0.25	4	0.00
ALASKA	-1.06	0.23	1	0.32
WYOMING	-1.10	0.17	1	0.20
MISSISSIPPI	-1.10	0.16	4	0.03
MONTANA	-1.11	0.14	1	0.22
NORTH DAKOTA	-1.12	0.13	1	-0.16
ARKANSAS	-1.12	0.13	3	0.11
WEST VIRGINIA	-1.14	0.09	2	0.11
LOUISIANA	-1.14	0.08	3	0.09

Source: Analysis by MERIC using data from the U.S. Patent and Trademark Office, U.S. Department of Commerce.

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A large number of Missouri's IT patents were issued in the data processing industry. IT patents were in: (1) financial, business and management data processing, with 3.00 patents issued annually; (2) generic control and system applications data processing, with 2.60 patents issued annually; (3) measuring and calibrating data processing, with 2.60 patents issued annually; and (4) multiple computer and process coordination, with 2.40 patents issued annually.

Missouri's largest national share of annual IT patents issued were in artificial intelligence, accounting for 1.35% of all patents of this type issued nationally.

Table 2.2
Information Technology
Average Annual Number of Innovations by Classification, 1996-2000
Average annual values for years 1996-2000

CLASSIFICATION	MISSOURI PATENTS	UNITED STATES PATENTS	PERCENT OF U.S. PATENTS
Financial, Business Practice, Management, or Cost/Price Determination (Data Processing)	3.00	373.80	0.80%
Generic Control Systems or Specific Applications (Data Processing)	2.60	282.80	0.92%
Measuring, Calibrating, or Testing (Data Processing)	2.60	302.20	0.86%
Multiple Computer or Process Coordinating (Electrical Computers & Digital Systems)	2.40	684.20	0.35%
Vehicles, Navigation, and Relative Location (Data Processing)	1.40	250.40	0.56%
Artificial Intelligence (Data Processing)	1.40	103.60	1.35%
Database and File Management, Data Structures, Or Document Processing (Data Processing)	1.40	692.00	0.20%
Support (Electrical Computers & Digital Systems)	1.40	413.60	0.34%
Input / Output (Electrical Computers & Digital Systems)	1.00	626.60	0.16%
Structural Design, Modeling, Simulation, and Emulation (Data Processing)	0.80	175.20	0.46%
Error Detection/Correction and Fault Detection/Recovery	0.80	554.60	0.14%
Speech Signal Processing, Linguistics, and Language Translation (Data Processing)	0.40	238.80	0.17%
Memory (Electrical Computers & Digital Systems)	0.40	527.00	0.08%
Arithmetic Processing and Calculating (Electrical Computers)	0.20	174.20	0.11%
Processor Architectures (Electrical Computers & Digital Systems)	0.20	368.60	0.05%

Source: Analysis by MERIC using data from the U.S. Patent and Trademark Office, U.S. Department of Commerce.

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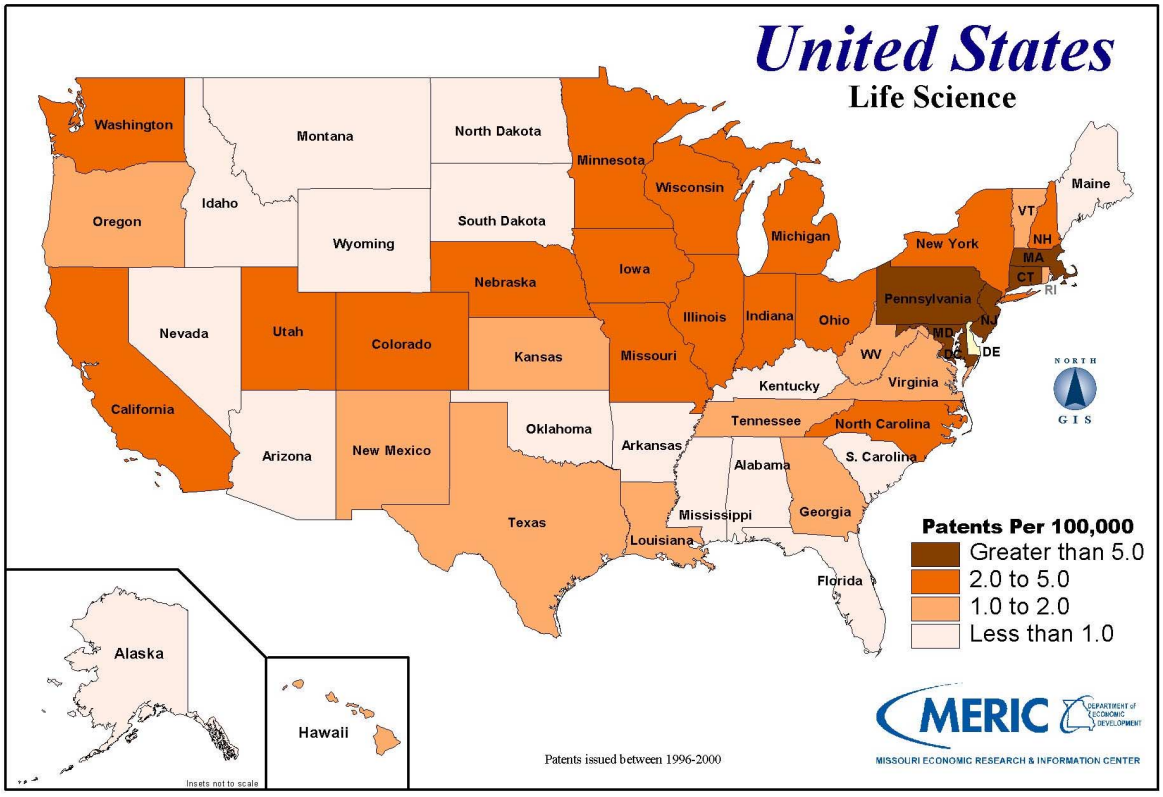
III. Innovation in Life Sciences

In the United States between 1996 and 2000, 2.96 life sciences patents were issued per 100,000 population. States with the highest number of life sciences patents issued per 100,000 population were Delaware (14.99), Massachusetts (9.28), New Jersey (8.44), Connecticut (7.43) and Maryland (6.90). States with the lowest number of life sciences patents per 100,000 were located in the South, the Mountain West, Alaska and Hawaii.

Missouri ranked very near the national average, with 2.86 life sciences patents issued per 100,000 population. Between 1996 and 2000, an average of 156 life sciences patents were issued annually in Missouri.

Map 3.1
Life Sciences
Average Annual Number of Patents Issued Per 100,000 Population, 1996-2000
Average annual values for years 1996-2000
U.S. average = 2.96 patents per 100,000 population



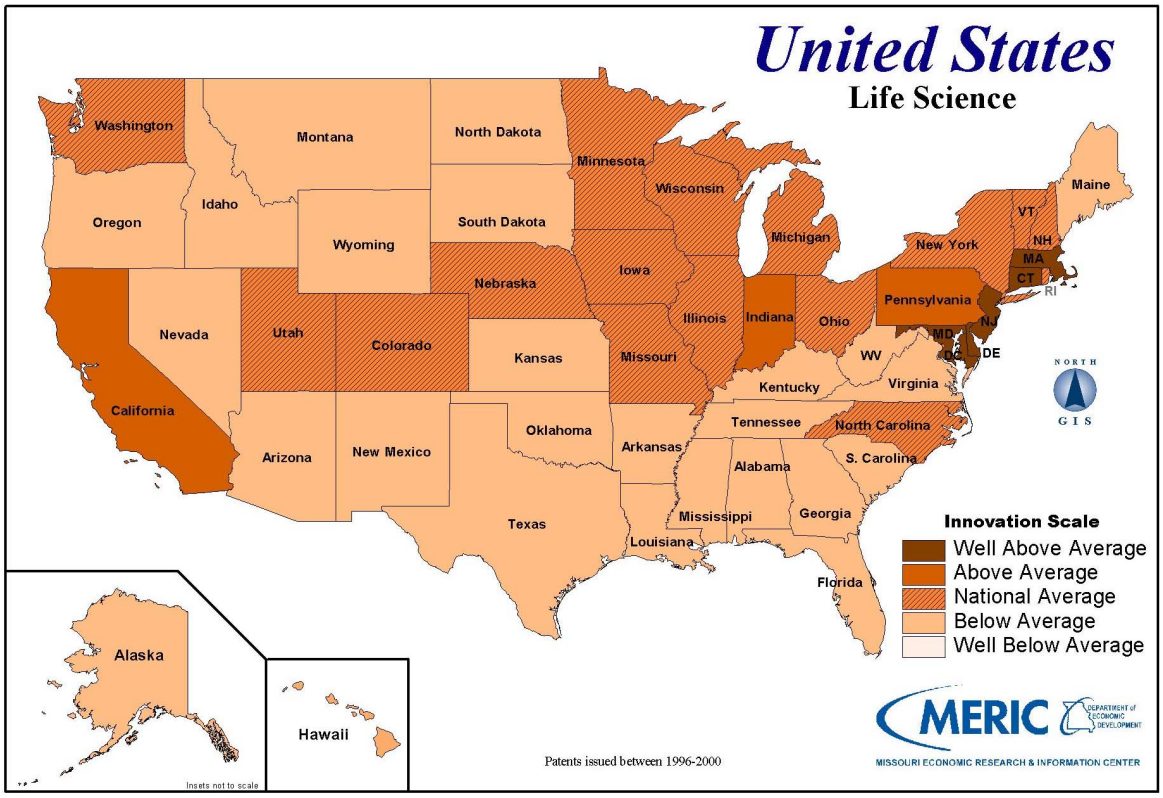
Source: Analysis by MERIC using data from the U.S. Patent and Trademark Office, U.S. Department of Commerce.

The life sciences innovation scale was created by calculating the standardized z-scores for the number of life sciences patents issued per 100,000 population. This allows for state-by-state comparison relative to the national average. Scores of 0.0 indicate life sciences innovation at the national average. Scores greater than 0.0 indicate life sciences innovation above the national average. Scores less than 0.0 indicate life sciences innovation below the national average.

States with well above average life sciences innovation scores were Delaware (4.42), Massachusetts (2.32), New Jersey (2.01), Connecticut (1.64) and Maryland (1.45). In addition, Pennsylvania, California, Indiana and Iowa had above average life sciences innovation scores. States with below average life sciences innovation scores were located in the South, the interior West, Alaska and Hawaii.

Missouri had a life sciences innovation score that was slightly below the national average (-0.04). Missouri ranked 13th in life sciences innovation nationally.

Map 3.2
Life Sciences
Innovation Scale, 1996-2000
Average annual values for years 1996-2000
Normed to the U.S. average of 2.96 patents per 100,000 population

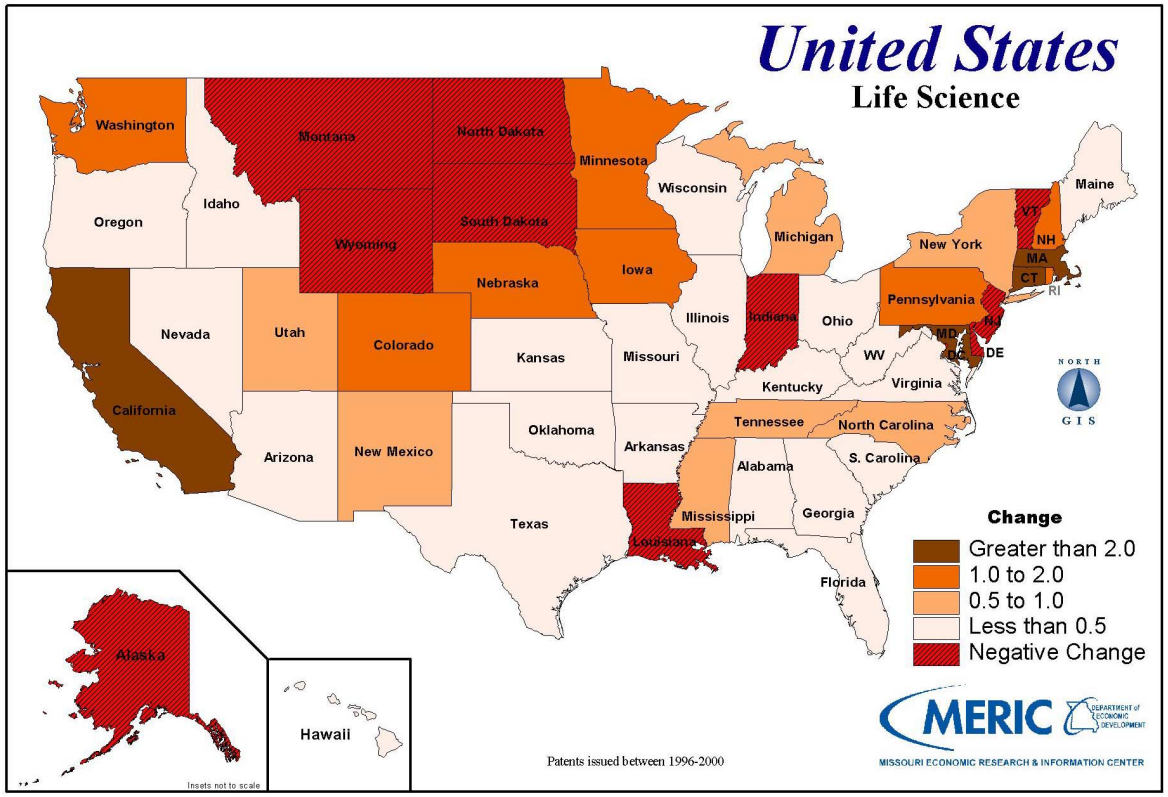


Source: Analysis by MERIC using data from the U.S. Patent and Trademark Office, U.S. Department of Commerce.

In the United States between 1996 and 2000, life sciences patents issued per 100,000 population grew by 0.78. States with the greatest change in the number of life sciences patents issued per 100,000 population were Connecticut (3.59), Massachusetts (3.43), California (2.38), Maryland (2.31), Pennsylvania (1.77), Colorado (1.74), Rhode Island (1.55) and Washington (1.48).

In Missouri, life sciences patents per 100,000 grew by 0.35 between 1996 and 2000, which was below the national growth rate of 0.78.

Map 3.3
Life Sciences
Change in Average Annual Number of Patents Issued Per 100,000 Population, 1996-2000
U.S. average = 0.78 patents per 100,000 population



Source: Analysis by MERIC using data from the U.S. Patent and Trademark Office, U.S. Department of Commerce.

Table 3.1
Life Sciences
Average Annual Number of Innovations by State, 1996-2000
Average annual values for years 1996-2000

STATE	INNOVATION SCALE	PATENTS PER 100,000	PATENTS ISSUED	CHANGE PATENTS/100K
DELAWARE	4.42	14.99	112	-4.02
MASSACHUSETTS	2.32	9.28	573	3.43
NEW JERSEY	2.01	8.44	687	-0.10
CONNECTICUT	1.64	7.43	245	3.59
MARYLAND	1.45	6.90	355	2.31
PENNSYLVANIA	0.81	5.17	624	1.77
CALIFORNIA	0.65	4.72	1,547	2.38
INDIANA	0.61	4.62	274	-0.80
IOWA	0.24	3.62	104	1.39
COLORADO	0.10	3.24	130	1.74
WASHINGTON	0.01	2.98	169	1.48
NEW HAMPSHIRE	0.00	2.97	35	1.33
UNITED STATES	**0.00**	**2.96**	**8,034**	**0.78**
MISSOURI	**-0.04**	**2.86**	**156**	**0.35**
NEW YORK	-0.07	2.78	509	0.59
MINNESOTA	-0.08	2.74	130	1.18
UTAH	-0.10	2.68	57	0.86
NORTH CAROLINA	-0.14	2.59	197	0.69
ILLINOIS	-0.14	2.58	312	0.35
WISCONSIN	-0.17	2.50	131	0.16
OHIO	-0.24	2.31	260	0.22
DIST OF COLUMBIA	-0.26	2.24	12	-0.14
MICHIGAN	-0.27	2.22	218	0.53
NEBRASKA	-0.35	2.01	34	1.07
RHODE ISLAND	-0.39	1.90	19	1.55
VERMONT	-0.47	1.68	10	-1.54
TEXAS	-0.51	1.57	311	0.40
TENNESSEE	-0.52	1.55	85	0.58
LOUISIANA	-0.59	1.35	59	-0.23
WEST VIRGINIA	-0.65	1.20	22	0.28
VIRGINIA	-0.65	1.20	82	0.34
OREGON	-0.66	1.17	39	0.23
GEORGIA	-0.66	1.17	90	0.15
KANSAS	-0.67	1.14	30	0.44
NEW MEXICO	-0.70	1.04	18	0.75
HAWAII	-0.70	1.04	12	0.48
FLORIDA	-0.72	0.99	149	0.36
MONTANA	-0.73	0.97	9	-0.35
NORTH DAKOTA	-0.74	0.94	6	-0.17
OKLAHOMA	-0.75	0.93	31	0.10
ALABAMA	-0.75	0.92	40	0.42
ARIZONA	-0.76	0.88	41	0.39
MAINE	-0.77	0.86	11	0.39
IDAHO	-0.77	0.86	11	0.45
SOUTH CAROLINA	-0.85	0.64	25	0.11
KENTUCKY	-0.86	0.62	25	0.36
WYOMING	-0.89	0.54	3	-0.01
ARKANSAS	-0.90	0.51	13	0.21
NEVADA	-0.92	0.46	8	0.48
MISSISSIPPI	-0.92	0.45	12	0.52
SOUTH DAKOTA	-0.97	0.33	2	-0.01
ALASKA	-1.00	0.23	1	-0.16

Source: Analysis by MERIC using data from the U.S. Patent and Trademark Office, U.S. Department of Commerce.

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A large number of Missouri's life sciences patents were issued in: (1) drug and bio-affecting compositions, with 72.40 patents issued annually; (2) organic compounds, with 33.20 patents issued annually; (3) molecular biology and microbiology, with 26.40 patents issued annually; and (4) multicellular living organisms, with 11.00 patents issued annually.

Missouri's largest national share of annual life sciences patents issued were in: (1) plant protecting and regulating compositions, accounting for 7.96% of all patents of this type issued nationally; (2) multicellular living organisms, accounting for 3.45% of all patents of this type issued annually; and (3) chemical fertilizers, accounting for 3.05% of all patents of this type issued nationally.

Table 3.2
Life Sciences
Average Annual Number of Innovations by Classification, 1996-2000
Average annual values for years 1996-2000

CLASSIFICATION	MISSOURI PATENTS	UNITED STATES PATENTS	PERCENT OF U.S. PATENTS
Drug, Bio-Affecting and Body Treating Compositions	72.40	3,649.40	1.98%
Organic Compounds	33.20	1,455.20	2.28%
Chemistry: Molecular Biology and Microbiology	26.40	2,223.20	1.19%
Multicellular Living Organisms and Unmodified Parts Thereof and Related Processes	11.00	318.40	3.45%
Plant Protecting and Regulating Compositions	8.20	103.00	7.96%
Chemistry: Analytical and Immunological Testing	4.20	257.00	1.63%
Chemistry: Fertilizers	0.80	26.20	3.05%

Source: Analysis by MERIC using data from the U.S. Patent and Trademark Office, U.S. Department of Commerce.

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VI. Implications and Summary

Innovation is generally considered one of the key components of success in the New Economy. Innovations occurring within an economy usually lead to increased economic output, the creation of more jobs with higher wages, increased investment and increased research and development dollars. Innovation also increases the attractiveness of an area for recruiting new businesses and highly skilled workers. The State of Missouri has identified two emerging industries in the New Economy - information technology and life sciences. One of Missouri's main efforts in the coming years should be to assist firms and institutions in developing more information technology and life sciences innovations for patenting.

To measure the degree of information technology and life sciences innovation within a state, utility patent data was compiled and analyzed. Data is taken from the Technology Assessment and Forecast (TAF) database, maintained by Patent and Trademark Office of the U.S. Department of Commerce.

Information Technology

In the United States between 1996 and 2000, 2.26 information technology (IT) patents were issued per 100,000 population. Missouri ranked well below the national average, with 0.37 IT patents issued per 100,000 population. Between 1996 and 2000, an average of 20 IT patents were issued annually in Missouri.

States with well above average IT innovation scores were Vermont, Oregon, California, Massachusetts, Idaho, Colorado, Texas and New Hampshire. In addition, Minnesota, Washington and Arizona had above average IT innovation scores. States with well below average IT innovation scores were located in the central South, the upper Great Plains, Alaska and Hawaii.

Missouri had a below average IT innovation score, compared to the national average. Missouri ranked 34th in IT innovation nationally.

A large number of Missouri's IT patents were issued in the data processing industry. Missouri's largest national share of annual IT patents issued were in artificial intelligence, accounting for 1.35% of all patents of this type issued nationally.

Missouri's low IT innovation score and slow IT innovation growth may hinder development of the state's targeted industries - advanced manufacturing, information technology and life sciences - since they rely heavily on IT infrastructure for mission-critical operations.

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Life Sciences

In the United States between 1996 and 2000, 2.96 life sciences patents were issued per 100,000 population. Missouri ranked very near the national average, with 2.86 life sciences patents issued per 100,000 population. Between 1996 and 2000, an average of 156 life sciences patents were issued annually in Missouri.

States with well above average life sciences innovation scores were Delaware, Massachusetts, New Jersey, Connecticut and Maryland. In addition, Pennsylvania, California, Indiana and Iowa had above average life sciences innovation scores. States with below average life sciences innovation scores were located in the South, the interior West, Alaska and Hawaii.

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A large number of Missouri's life sciences patents were issued in drug and bio-affecting compositions, organic compounds, molecular biology and microbiology and multicellular living organisms.

Missouri's largest national share of annual life sciences patents issued were in plant protecting and regulating compositions (7.96%), multicellular living organisms (3.45%) and chemical fertilizers (3.05%).

Missouri's average life sciences innovation score indicates that the state is keeping pace with the rest of the nation in this developing industry. One particular area of strength is the pharmaceutical industry, since many of the state's innovations came from this industry. However, growth in life sciences innovations is sluggish, so more needs to be done to ensure the continued growth of this industry in Missouri.

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Appendix A -USPCS Aggregations

USPCS CODE	TECHNOLOGY CLASS DESCRIPTION
INFORMATION TECHNOLOGY	
700	Generic Control Systems or Specific Applications (Data Processing)
701	Vehicles, Navigation, and Relative Location (Data Processing)
702	Measuring, Calibrating, or Testing (Data Processing)
703	Structural Design, Modeling, Simulation, and Emulation (Data Processing)
704	Speech Signal Processing, Linguistics, Language Translation, and Compression (Data Processing)
705	Financial, Business Practice, Management, or Cost/Price Determination (Data Processing)
706	Artificial Intelligence (Data Processing)
707	Database and File Management, Data Structures, Or Document Processing (Data Processing)
708	Arithmetic Processing and Calculating (Electrical Computers)
709	Multiple Computer or Process Coordinating (Electrical Computers and Digital Processing Systems)
710	Input/Output (Electrical Computers and Digital Processing Systems)
711	Memory (Electrical Computers and Digital Processing Systems)
712	Processors and Instruction Processing (Electrical Computers and Digital Processing Systems)
713	Support (Electrical Computers and Digital Processing Systems)
714	Error Detection/Correction and Fault Detection/Recovery
716	Design and Analysis of Circuit or Semiconductor Mask (Data Processing)
717	Software Development, Installation, and Management (Data Processing)
LIFE SCIENCES	
071	Chemistry: Fertilizers
260	Chemistry of Carbon Compounds
424	Drug, Bio-Affecting and Body Treating Compositions (includes Class 514)
435	Chemistry: Molecular Biology and Microbiology
436	Chemistry: Analytical and Immunological Testing
504	Plant Protecting and Regulating Compositions
532	Organic Compounds (includes Classes 532-570)
800	Multicellular Living Organisms and Unmodified Parts Thereof and Related Processes

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